

**COMPOSITE BACKING LAYER FOR A
DOWNHOLE ACOUSTIC SENSOR****ABSTRACT OF THE DISCLOSURE**

An acoustic sensor for use in a downhole measurement tool is provided. The acoustic sensor includes a piezoelectric transducer and a backing layer having at least one powder material disposed in an elastomeric matrix material. In various exemplary embodiments, the backing layer includes first and second tungsten powders disposed in a fluoroelastomer matrix material. Exemplary embodiments of this invention may advantageously withstand the extreme temperatures, pressures, and mechanical shocks frequent in downhole environments and thus may exhibit improved reliability. A method for fabricating an acoustic sensor is also provided.